

# **SECTION 06100**

## **CARPENTRY**

### **PART I - GENERAL**

#### **1.1 DESCRIPTION OF WORK**

A. This Section specifies the following items:

1. Wood furring.
2. Plywood sheathing and backing panels.
3. Finish hardware installation.

#### **1.2 DEFINITIONS**

- A. Dimension Lumber: Lumber of 2 inches nominal or greater but less than 5 inches nominal in least dimension.
- B. Lumber grading agencies, and the abbreviations used to reference them include the following:
  1. ALSC: American Lumber Standard Committee
  2. AWPA: American Wood-Preservers Association
  3. DHI: Door and Hardware Institute
  4. NELMA: Northeastern Lumber Manufacturers Association
  5. NHLA: National Hardware Lumber Association
  6. NLGA: National Lumber Grades Authority

#### **1.3 SUBMITTALS**

- A. Submit for each type of process and factory-fabricated product. Indicate component materials and dimensions, and include construction and application details.
  1. Include data for wood preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
  2. Include data for fire retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.
  3. For fire retardant treatments specified to be High-Temperature (HT) type, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D 5664.

4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to project site.
  5. Include copies of warranties from chemical treatment manufacturers for each type of treatment.
- B. For the following products, provide compliance documentation with applicable building and state codes:

1. Preservative treated wood.
2. Fire- retardant-treated wood.
3. Power driven fasteners.
4. Powder-actuated fasteners.
5. Expansion anchors.

## **1.4 DELIVERY, STORAGE, AND HANDLING**

- A. Stack lumber flat with spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.
- B. Deliver interior wood materials that are to be exposed to view only after building is enclosed and weatherproof, wet work other than painting is dry, and HVAC system is operating and maintaining temperature and humidity at occupancy levels.

# **PART 2- PRODUCTS**

## **2.1 WOOD PRODUCTS**

- A. Lumber: Provide lumber graded by DOC PS 20 standards and applicable rules of grading agencies. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
  1. Factory mark each piece of lumber with grade stamp of grading agency.
  2. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece.
  3. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, produce minimum dressed sizes for dry lumber.
  4. Provide dressed lumber sanded four sides (S4S) unless otherwise indicated.

## **2.2 WOOD PANEL PRODUCTS**

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- A. Plywood: Complying with the requirements of DOC PS 1.
- B. Thickness: As needed to comply with requirements specified, but not less than thickness indicated.
- C. Factory mark panels to indicate compliance with applicable standard.

### **2.3 WOOD PRESERVATIVE-TREATED MATERIALS**

- A. Preservative Treatment by Pressure Process complying in requirements of AWPA C2.
  - 1. Preservative Chemicals: Acceptable to the Authority and containing no arsenic or chromium.
- B. Kiln-dry lumber after treatment to maximum moisture content of 19 percent.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
- D. Application: Treat miscellaneous carpentry, including the following:
  - 1. Wood sills, sleepers, blocking furring and similar concealed members in contact with masonry or concrete.
  - 2. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
  - 3. Wood framing members that are less than 18 inches above the ground in crawl space.
  - 4. Wood floor plates that are installed over concrete slabs-on grade.

### **2.4 FIRE- RETARDANT-TREATED MATERIALS.**

- A. General: Comply with performance requirements in AWPA C20 (Lumber) and AWPA C27 (Plywood).
  - 1. Use treatment that does not promote corrosion of metal fasteners.
  - 2. Use exterior type for exterior locations and where indicated.
  - 3. Use Interior Type A, High Temperature for enclosed roof framing and where indicated.
  - 4. Use Interior Type A, unless otherwise indicated.
- B. Identify fire-retardant-treated wood with appropriate classification marking of Underwriters Laboratory.
  - 1. All lumber and plywood to have a flame spread rating of 25 or less when tested in accordance with ASTM E-84, Standard Test Method for Surface Burning Characteristics of Building Materials
- C. Application: Treat concealed miscellaneous carpentry, including but not limited to the following:
  - 1. Concealed blocking at partition framing and window openings.

2. Plywood backing panels.
- D. Products: Subject to compliance with requirements, provide products by one of the following:
  1. Dricon; a Division of Hickson Corporation.
  2. Hoover Treated Wood Products.
  1. Bestway of New England.

## **2.5 MISCELLANEOUS LUMBER**

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
  1. Blocking
  2. Nailers
  3. Cants
  4. Furring
- B. For items of dimension lumber size, provide Construction or No.2 grade lumber with 15 percent maximum moisture content and any of the following species:
  1. Hem-fir (north); NLGA
  2. Spruce-Pine-fir;NLGA
- C. For concealed boards, provide lumber with 15 percent maximum moisture content and any of the following species and grades:
  1. Hem-fir or hem fir (North), Construction or 2 Common grade;NLGA.
  2. Spruce-pine-fir (south) or spruce-pine fir, Construction or 2 common grade; NELMA or NLGA
- D. For blocking not used for attachment of other construction, utility, stud, or No.3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with the attachment and purpose.
- E. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.
- F. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.
- G. Application: Provide kiln dried lumber in the following locations:
  1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.

## **2.6 PLYWOOD BACKING PANELS**

- A. Electrical Equipment Backing Panels: DOC PS1, Exposure 1, C-D  
Plugged, fire-retardant treated, in thickness indicated, or if not  
indicated, not less than  $\frac{1}{2}$  inch nominal thickness.

## **2.7 FASTENERS**

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
1. Where carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners of Type 316 stainless steel.
- B. Nails, Brads, and Staples: Complying with the requirements of ASTM F 1667.
- C. Power-Driven Fasteners: Complying with NES NER-272.
- D. Wood Screws: Complying with the requirements of ASME B18 .6.1.
- E. Screws for Fastening to Cold-Formed Metal Framing: Complying with the requirements ASTM C954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material be fastened.
- F. Lag Bolts: Complying with ASEM B18. 2.1.
- G. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated flat washers.
- H. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.
1. Material : Stainless steel with bolts and nuts complying with ASTM F593 and ASTMF 594 Alloy group 1 or 2.

## **PART 3- EXECUTION**

### **3.1 GENERAL**

- A. Set carpentry to required levels and lines with members plumb, true to line, cut, and fitted. Fit carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking and

- similar supports to comply with requirements for attaching other construction.
- B. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items and trim.
  - C. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:
    1. Fire block furred spaces of walls, at each floor level, at ceiling, and not more than 96 inches on-center (o.c.) with solid wood blocking or noncombustible materials accurately fitted to close furred spaces.
    2. Fire block concealed spaces behind combustible cornices and exterior trim at not more than 20 feet o.c.
  - D. Sort and select lumber so that natural characteristics will not interfere with installation or fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
  - E. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
    1. Use inorganic boron for items that are continuously protected from liquid water.
  - F. Securely attach carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
    1. NER-272 for power driven fasteners.
    2. Table 2304.9.1, "Fastening Schedule", in the International Building Code.
  - G. Use common wire nails, unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; do not countersink nail heads, unless otherwise indicated.

### **3.2 WOOD BLOCKING AND NAILER INSTALLATION**

- A. Install where indicated and where required for screeding or attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated.

### **3.3 WOOD FURRING INSTALLATION**

- A. Install level and plumb with closure strips at edges and openings. Shim with wood as required for tolerance of finish work.
- B. Furring to Receive Plywood: Install 1-by-3 inch nominal-size furring vertically 24 inches o.c.

### **3.4 FIRE- RETARDANT-TREATED (FRT) MATERIALS INSTALLATION**

- A. Cutting to length, drilling holes, joining cuts and light sanding are permissible. It is not necessary to field treat cut ends to maintain flame spread rating.
  1. Ripping, milling and surfacing of FRT lumber is not permitted.
  2. FRT Plywood can be cut in either direction without loss of fire protection

### **3.5 FINISH HARDWARE INSTALLATION**

- A. Mounting Heights: Mount door hardware units at heights indicated as follows unless otherwise indicated or required to comply with governing regulations.
  1. Standard Steel Doors and Frames DHI "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames".
  2. Wood Doors: DHI WDHS 3 "Recommended Locations for Architectural Hardware for Wood Flush Doors".
- B. Install each door hardware item to comply with manufacturers written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage and reinstallation of surface protective trim units with finishing work. Do not install surface-mounted items until finishes have been completed on substrates involved.
  1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
  2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- C. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Sections Joint Sealants.

### **3.6 PROTECTION**

- A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.
- B. Protect rough carpentry from weather. If despite protection, rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

## **PART 4 - MEASUREMENT AND PAYMENT**

### **4.1 PAYMENT ITEMS**

ITEM NO.	DESCRIPTION	UNIT
0610.001	Carpentry	Lump Sum

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